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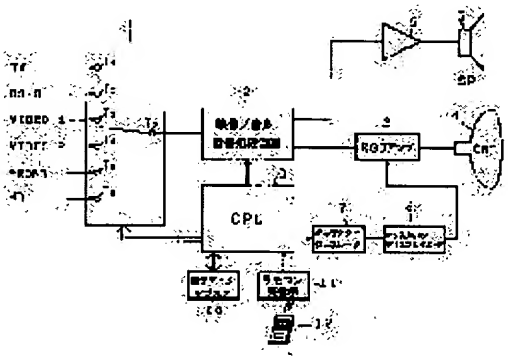
(54) AUDIOVISUAL EQUIPMENT

(57)Abstract:

PURPOSE: To improve the using feeling of an audiovisual equipment with the least necessary frequency of key operations by controlling a switch selecting part based On the data on a terminal data register so as not to switch an invalid input terminal.

CONSTITUTION: A CPU 9 consists of a microcomputer, etc., and can control the changeover of a switch selecting part 1 and the operation of each function circuit part of a video/sound signal processing circuit 2, etc. A terminal data register 10 consists of a nonvolatile memory, an EEP-ROM, etc., and can store the set changeover valid/invalid data on the input terminals T1-T6 When the input sources are successively selected by a TV/video switch key based on the changeover valid/invalid data on the terminals T1-T6 set by a user, an audiovisual equipment omits the selection and the display of the input sources corresponding to the unused terminals and instead successively switches and selectively displays only the terminals that are connected to the input sources.



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CLAIMS

[Claim(s)]
[Claim 1] Have the change-over-switch section to which an image / voice source can switch about two or more input/output terminals inputted or outputted and each of said input/output terminal, and various desired image / voice sources are set to a selectable AV equipment. The input/output terminal data storage section which can set up change effective / invalid about each of said input/output terminal, and can hold this as data, The AV equipment characterized by having the control section which can control the change-over-switch section not to switch to the input/output terminal made into the invalid based on the data of this input/output terminal data storage section.
[Claim 2] Said control section is an AV equipment according to claim 1 characterized by being constituted so that the control for not performing the display about the input/output terminal made into the invalid based on the data of said input/output terminal data storage section may be possible.
[Claim 3] Said control section is an AV equipment according to claim 1 or 2 characterized by being constituted in a normal operating mode so that a setup of change effective / invalid of said input/output terminal may be possible.
[Claim 4] Said control section is an AV equipment according to claim 1 or 2 characterized by being constituted in service mode so that a setup of change effective / invalid of said input/output terminal may be possible.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] This invention is concerned with an AV equipment, is equipped with the input/output terminal of two or more image / voice sources like especially a television receiver, a monitoring device, and an AV amplifier, and relates to the AV equipment in which these changes are possible.
[0002]
[Description of the Prior Art] In recent years, for example, a monitoring device, and a television receiver, two or more various image input terminals which it not only receives and displays terrestrial broadcasting, but make BS broadcast and VTR the start are prepared, and what has the function which a user can choose as arbitration by actuation of a remote controller (remote control) etc., and can display from from among the image sources (the audio source is also connectable depending on the case) connected to these image input terminals is known. And whenever the so-called television / video exchange key are prepared, for example and it carries out press actuation of this the television / video exchange key by a unit of 1 time on the occasion of selection of such the image source, the thing from which he is trying for the image source to switch one by one is known. Thus, if the image source is made selectable by one actuation key, since the number of keys for image source selection which should be allotted to remote control, for example can be stopped to the minimum, it is used as an effective means.
[0003] In the monitoring device 20 which drawing 8 shows the image change-over by television / video exchange key of the monitoring device which has a function which was described above, and is shown in this drawing For example, TV input by terrestrial broadcast, the BS decoder input to which the output of the BS decoder of BS (satellite) broadcast by scramble is connected, The external image input 1 which can connect external VTR etc. and the external image input 2, the FRONT input which is the image source input terminal prepared in the front panel of a monitoring device 20, It shall be prepared by all of HD inputs to which the video signal by the Hi-Vision method is supplied in the input terminal of the six image sources. Moreover, it is the image source display which 20a shows the display screen and shows the image source by which 21 is displayed on the predetermined location on the display screen, and current selection is made.
[0004] For example, supposing the current television input is chosen in the monitoring device 20, as shown in drawing, the channel (for example, displayed like "CH1") of television by which the current channel selection is carried out will be displayed on display screen 20a as image source display 21. And if a user does press actuation of television / the video exchange key once, while the image which the input terminal of a BS decoder was chosen and was supplied to display screen 20a from the BS decoder will be displayed from this condition, it switches to the image source display 21 which shows that the image source by which current selection is made is a BS decoder, for example, is displayed like "BD-D" of drawing.
[0005] Whenever press actuation of television / the video exchange key is carried out once similarly

hereafter, the image source by which it is indicated by selection switches to the order of an external image input 1 -> external image input 2 -> front input -> Hi-Vision input. And in connection with this, the image source display 21 also switches to "VIDEO1" (external image input 1 is shown) ->"VIDEO2" (external image input 2) ->"FRONT" (front input) -> "HD" (Hi-Vision input), as shown in drawing. And if press actuation of television / the video exchange key is carried out further, selection will switch to a television input in the same sequence as the above after return.

[0006]

[Problem(s) to be Solved by the Invention] However, though a television receiver or a monitoring device has many input terminals as mentioned above and it enables it to be able to try to connect the various image sources When a user actually uses a device It does not restrict that all these input terminals are used, for example, also when saying that nothing has connected with other input terminals only by using it by some user, connecting VTR to the external image input 1 other than the usual television input, it thinks mostly. Then, when it switches to VTR of the external image input 1 from a television input in such a situation and the image source is utterly chosen by television / video exchange key, the BS decoder input which is not used first will be chosen and the external image input 1 made into the purpose next will be chosen. That is, press actuation of television / the video exchange key must be carried out twice. And after choosing an external image input 2 -> front input -> Hi-Vision input from this external image input 1 as a case the method of a change, and the bottom again at a television input, the television input made into the purpose will be chosen. That is, a total of four press actuation of television / video exchange key must be performed in this case. Thus, even if it is using the device which can connect comparatively many image sources, when there is little actually connected image source, it has the problem of becoming complicated [the key stroke which selection of the image source takes], and troublesome.

[0007] Moreover, although changing the number of input/output terminals as the variation is also considered when the same substrate, a basic chassis, etc. tend to constitute the high order or low order model of monitoring device shown in the manufacturer side at drawing 8 and it is going to measure low cost-ization In order to perform actuation corresponding to the number of input/output terminals set up for every model corresponding to this In order that the need of removing specially the need of preparing the passive circuit elements for detecting the existence of an input/output terminal, the components prepared on the substrate from the low order model for the high order model may come out, it also has the problem that it is not actually effective in a cost side.

[0008]

[Means for Solving the Problem] Then, in order that this invention may solve the above-mentioned trouble, have the change-over-switch section to which an image / voice source can switch about each of two or more input/output terminals inputted or outputted and an input/output terminal, and various desired image / voice sources are set to a selectable AV equipment. The input/output terminal data storage section which can hold the data which set up effective/invalid of a change about each of these input/output terminals, We decided to prepare the control section which can control the change-over-switch section not to switch to the input/output terminal made into the change invalid based on the data of this input/output terminal data storage section. And the control section decided to constitute so that the display about the input/output terminal made into the invalid with the data of the input/output terminal data storage section may not be performed. Moreover, it considered as the thing which constitute in a normal operating mode so that a setup of effective/invalid of an input/output terminal may be possible and which is further constituted in service mode so that a setup of effective/invalid of an input/output terminal may be possible.

[0009]

[Function] According to the above-mentioned configuration, based on the data of the input/output terminal data storage section, the change selection to the input/output terminal made into the invalid and the selection display accompanying this are made not to be performed. Moreover, a setup to arbitration of a user is attained by making possible setting-operation to the input/output terminal data storage section in a normal operating mode. Moreover, by making possible setting-operation to the input/output

terminal data storage section in service mode, a functional setup input/output terminal-related [corresponding to a model] becomes possible by the key stroke.
[0010]
[Example] Drawing 1 is the block diagram showing one example of the AV equipment of this invention, and shows the case where this invention is applied to a monitoring device in this drawing. 1 shows the change-over selection section. In this change-over selection section 1, it is T1 -T7. The terminal is prepared and it is terminal T1 -T6 in this case. Terminal T7 It receives and is made to switch. That is, T1 -T6 It considers as the input terminal of a monitoring device, and is a terminal T1. A television input (TV) and terminal T2 A BS decoder input (BS-D) and terminal T3 The external image input 1 (VIDEO1) and terminal T four The external image input 2 (VIDEO2) and terminal T5 A front input (FRONT) and terminal T6 It considers as a Hi-Vision input (HD). And these terminal T1 -T6 One of terminals is terminals T7. By connecting, either of the above-mentioned input sources is a terminal T7. It will mind and an image / sound signal processing circuit 2 will be supplied. In addition, although two or more images and an audio input terminal are prepared as a group in fact depending on the input source, it bundles up with one terminal for convenience here, and is shown.
[0011] 2 -- terminal T7 from -- the video-signal processing and sound signal processing of the input source which are the image / sound signal processing circuit 2 which processes, and was chosen about the image and sound signal of the input source which were supplied according to a method are performed, a video signal performs processing necessary in a sound signal to the RBG amplifier 3 as an RGB code, and the voice amplifier 5 is supplied.
[0012] With the RGB amplifier 3, the RBG signal from an image / sound signal processing circuit 2 and the RBG signal supplied from the onscreen display board 8 mentioned later are compounded, it is impressed by CRT4, and, thereby, image display is performed. Moreover, a voice output is made by supplying the sound signal amplified with the voice amplifier 5 to a loudspeaker 6.
[0013] 7 is a character generator and outputs necessary alphabetic data and symbol data based on control of CPU9. 8 is an onscreen display board, generates an RGB code to predetermined timing based on alphabetic data and symbol data which were supplied from the character generator 7, and outputs it to the RGB amplifier 3. Thereby, a channel display, a volume display, an image source display which was further explained by drawing 8 , etc. are performed.
[0014] 9 is CPU which can perform motion control of each functional circuit section, such as change control of the change-over selection section 1, and the image / sound signal processing circuit 2, and is constituted by the microcomputer etc. 10 is input terminal T1 -T6 mentioned later. It is the terminal data register which can carry out storage maintenance of the setting data of change effective / invalid, for example, is constituted by nonvolatile memory, EEP-ROM, etc. 11 shall receive and decode the command signal of remote control 12, the remote control receive section which can supply CPU as command data shall be shown, and it shall be prepared at least as a key for input source selection in this case at remote control 12 in television / video exchange key which makes sequential selection of the input source. In addition, in this drawing, a perpendicular / horizontal deflection system omits and is shown.
[0015] In the monitoring device of the above-mentioned configuration, a user is able to set change effective / invalid of an input terminal as arbitration, for example (for it to be called AV setup), and about the input terminal made into the change invalid based on this setting data, when television / video exchange key is operated, it is made not to be carried out in a change.
[0016] It is here, next setting (AV setup) actuation of change effective / invalid a user's input terminal is explained with reference to drawing 2 . For example, if a user considers as AV setting mode by the menu screen key prepared in the remote control unit, AV setting screen as shown in the display screen of a monitoring device at drawing 2 (a) will be displayed, and a setup of change effective / invalid of an input terminal will be attained. In AV setting screen shown in this drawing, 1 to which the column of "No" was given for every input source - 6 source number are shown, and the notation which shows the input source name of TV, BS-D, VIDEO1 and VIDEO2, FRONT, and HD is made by the column of "SOURCE" for every source number. in addition, the column of "LABEL" shown here -- for example, it

is prepared so that a user can set up the input source name actually used, connecting with each input terminal and it can indicate by the image source, and "VTR" written by this column omits detailed explanation here, although "MDP" shows the so-called multiple disk player and "V-CAM" has a video camcorder a VTR device shown. Moreover, K shows cursor.

[0017] For example, supposing the user is using the television input source about this monitoring device, he will not perform actuation of what about the source number 1 in this case, either. That is, as shown in drawing 2 (a), when the source name etc. is displayed on "SOURCE" for every source number, and the column of "LABEL", the change owner effect will be meant. And supposing the user is not connecting the BS decoder to this monitoring device, he will move Cursor K to the location (cursor K shown with a broken line) of the source number 2 by actuation of rise/down key of remote control etc. from the condition shown in this drawing 2 (a). Next, as a user shows drawing 2 (b) by the necessary key stroke, a bar is displayed about the train of the source number 2. That is, a change invalid is meant about what is written. And supposing it is not using the input terminal of the external image input 2 (VIDEO2) further in addition to a BS decoder, either, a user will move Cursor K to the location of the source number 4, as shown in drawing 2 (c), and will indicate by the bar about the train of the source number 4 by the necessary key stroke similarly. And actuation of a next, for example, remote control, enter key sets a setup of change effective / invalid as set up by drawing 2 (c) to the terminal data register 10 as data. And AV setting mode will be canceled and it will return to the usual display mode after this.

[0018] When a setup which shows an example of the contents of storage of the terminal data register 10, for example, was shown in drawing 2 (c) is set as data, drawing 3 As shown in this drawing, H which shows the change owner effect is set to the address of the source number 1 (TV connects). L which shows a change invalid below to the source number 2 (BS-D) will be set to L and the source number 5 (FRONT), and H will be set to H and the source number 6 (HD) by H and the source number 4 (VIDEO2) at the source number 3 (VIDEO1).

[0019] And when a user chooses the input source by television / video exchange key in the next usual display mode, a change as shown in drawing 4 is performed. In addition, the same part as drawing 8 attaches the same sign, and omits explanation. For example, based on this, if the setting data of the terminal data register 10 show drawing 3 , as shown in the broken line of this drawing, the change to the BS decoder (BS-D) and the external image input 2 (VIDEO2) which are made intact will be omitted.

[0020] That is, if the current television input is chosen, it is a terminal T1. Terminal T7 While connecting and displaying the image of the channel under current channel selection on display screen 20a, it is in the condition that the channel under current channel selection (for example, "CH1") is displayed as image source display 21. Next, supposing a user does press actuation of television / the video exchange key once from this condition, as for CPU9, this command data will perform change control of the change-over selection section 1 first. And CPU9 reads the setting data of the terminal data register 10 in this case, and it is an input terminal T2. A change-over setup for every source number, i.e., a change-over established state, is distinguished. In this case, since L is set as shown in drawing 3 , the source number 2 is a terminal T2. It distinguishes that it is a change invalid and is a terminal T2. It receives and a change is not performed. And H is set to the following source number 3, and it is terminal T3. Since it switches and is effective, CPU9 is terminal T3. It receives and is a terminal T7. Change control is performed so that it may connect. By this, selection of a BS decoder (BS and D) will be omitted, and the image of the external image input 1 (VIDEO1) will newly be displayed. And the data signal which shows VIDEO1 from CPU9 in connection with this is supplied to a character generator, and the RGB code according to this is outputted from the onscreen display board 8. By this, as the image source display 21 is also shown in the arrow head of drawing 4 , it will be displayed as "CH1" to "VIDEO1." In addition, if always displayed, since it may become obstructive, when selection of a source image switches, it is desirable [such image source display 21] that the display of fixed time amount (for example, for several seconds) is made.

[0021] And when press actuation of television / the video exchange key is further carried out once from the above-mentioned condition, CPU9 is the terminal T5 (source number 5) and terminal T7 which do not perform the change to terminal T four (source number 4) made into the change invalid based on the

setting data of the terminal data register 10, but switch to a degree, and are confirmed. Change control is performed so that it may connect. By this, as for the external image input 2 (VIDEO2), selection will be omitted, and the next front input (FRONT) will be chosen and displayed. Moreover, as the image source display 21 is also shown in the arrow head of drawing 4 in this case, it switches from "VIDEO1" to the display of "FRONT."

[0022] And terminal T6 corresponding to [if press actuation of television / the video exchange key is carried out further, will switch to a degree, and] the effective source number 6 While receiving, being switched and displaying a Hi-Vision image on display screen 20a, as the image source display 21 is also shown in an arrow head, it switches to "HD." It will switch, if press actuation of television / the video exchange key is further carried out from here, and it is the terminal T1 of the first effective source number 1. It receives, and it is switched, television imagery is displayed again, and the image source display 21 also returns and switches from "HD" to "CH1" which shows the channel for example, under current channel selection (shown in an arrow head). And the change and display action which were described above whenever press actuation of television / the video exchange key was carried out will be repeated henceforth. Thus, in this example, if change effective / invalid of the input source are set up in AV setting mode, in case the input source is chosen by television / video exchange key, the input source corresponding to an intact input terminal is omitted, and can perform a sequential change.

[0023] Processing actuation of CPU9 in the case of the input source selection by television / video exchange key actuation which is there, next was described above is explained with reference to the flow chart of drawing 5 . First, by this routine, the command data in which an input source sequential change is shown by actuation of television / video exchange key are inputted into CPU (F101). It increments with n=n +1 about the variable n which shows the source number (1-6) corresponding to the input terminal (T1 -T6) of the change-over selection section 1 by which current selection is made by progressing to step F102, respectively, and progresses to step F103 further. At this step F103, if it has distinguished whether it is a variable n> 6 and it is distinguished that it is n> 6 here, after progressing to step F104 and being referred to as n= 1, it will progress to step F105, and if it is not n> 6 and will be distinguished, it will progress to step F105 as it is.

[0024] At step F105, it will be distinguished whether the data which read the data set to the address of the source number n from the terminal data register 10, progressed to step F106 and were read at this step are set to H. And when [whose data set are not H] it is distinguished that it is got blocked and is L level, it will return to step F102 and processing to step F106 will be repeated again. As for the input terminal corresponding to a change invalid and the set-up source number, change-over connection will be omitted by this processing. It is the input terminal and terminal T7 corresponding to [when it is distinguished at this step that data are H / CPU9 progresses to step F107, and] the current source number n on the other hand. The change-over selection section 1 is controlled to connect. By this, it will switch and a display and voice output of the effective following input source will be performed. And CPU9 will progress to step F108, will output the data for performing the image source display corresponding to the input source chosen at previous step F107 predetermined time to a character generator 7, and will return to the routine of Maine.

[0025] By the way, as the operation mode in the AV equipment which makes a monitoring device the start, like a channel change-over, a volume setup, or AV selection that was further described above, the serviceman other than the user operation mode to which a user usually operates and controls remote control uses for adjustment, or the service mode in which necessary initial setting etc. can be performed at the time of factory shipments is known. This service mode can be set up now by performing a key stroke according to a predetermined operational sequence with remote control etc. Then, in other examples explained below, it is constituted so that change effective / invalid of an input terminal can be set up in this service mode. Although changing the number of input/output terminals as a functional difference between these models may be performed when it is, thereby for example, going to constitute two or more models (model) using the same circuit board or the same basic chassis In such a case, if change effective / invalid according to the input/output terminal set up for every model after using the same substrate are set up as initial setting, since the functional distinction about an input/output terminal

cannot be depended on electronic parts etc. but software can perform it, it becomes effective in respect of cost.

[0026] If other examples were applied to the monitoring device, let the configurations of this monitoring device be what was shown in drawing 1 , and what the same and good. However, the numbers of input terminals prepared for every model at least differ as mentioned above. Then, although other examples are explained with reference to drawing 6 and drawing 7 below, suppose that the case where initial setting is performed about a BS decoder and the low order model in which the input terminal for a Hi-Vision input is not prepared is explained by making into a highest-end model the monitoring device shown in drawing 1 in this case.

[0027] For example, let the monitoring device of this example be service mode according to the predetermined key stroke by the remote control unit. And if it is AV setting mode by the further predetermined key stroke, a setting screen as shown, for example in drawing 6 (a) will be displayed. Corresponding to the source number (column of "No") of ** 1-6, TV, BS, D, VIDEO1 and VIDEO2, FRONT, and HD which show the image input source are shown to the column of "SOURCE" by this setting screen. And ON / off setup, i.e., initial setting of change effective / invalid, is made to be performed to these. And it shall be in the condition that all the input sources are set to ON corresponding to the input/output terminal prepared in the highest-end model in this case. And since Cursor K is moved to the location of a necessary source number in setting up, ON/OFF of the input source corresponding to the source number are set up by the predetermined key stroke. For example, since the monitoring device which is carrying out a current setup has the input terminal of television, the external image input 1, the external image input 2, and a front input, it will set up that it is off about BS, and D (BS decoder input) and HD (Hi-Vision input). Although a setting screen will be in the condition of drawing 6 (b) by this actuation, supposing it operates an enter key from this condition, data will be set to the terminal data register 10 as shown in drawing 7 . and when this monitoring device includes a user's hand and performs input source selection by television / video exchange key by the regular-user operation mode In order that CPU9 may control so that sequential selection is again performed like a television input (TV) based on the data shown in drawing 7 from a television (input TV) -> external image input 1 (VIDEO1) -> external image input 2 (VIDEO2) -> front input (FRONT), It will have the input source change function which was in agreement with the input terminal configuration prepared in the monitoring device concerned.

[0028] In addition, also when it constitutes in service mode as mentioned above so that AV setup may be possible, if it becomes in the above-mentioned case, it is desirable to constitute so that a user can perform AV setup like a previous example about a television input (TV), the external image input 1 (VIDEO1), the external image input 2 (VIDEO2), and a front input (FRONT).

[0029] In addition, although change effective / invalid is set up about two or more input terminals in each above-mentioned example, when the output terminal of a certain image and voice source is prepared further, for example, it is possible to perform effective / invalid setup of a change-over including these output terminals. Moreover, although the case where an input terminal was alternatively switched in each above-mentioned example was explained, two or more input/output terminals can switch to coincidence, and this invention can be applied also about the AV equipment constituted so that two or more signal paths can be controlled to coincidence. Furthermore, in each above-mentioned example, although the case where this invention is applied to a monitoring device is explained, it is not limited to this, and application is made possible to the AV equipment which has two or more input/output terminals, such as a television receiver, and an audio amplifier, an AV amplifier, a VTR device.

[0030]

[Effect of the Invention] As explained above, based on the data of change effective / invalid of the input/output terminal which the user set up, the AV equipment of this invention in the case of sequential selection of the input source by television / video exchange key Since a sequential change and a selection display can be performed only about the terminal to which the selection and the selection display of the input source corresponding to an intact terminal were omitted, and the current input

source was connected, For example, since the count of a key stroke can be managed with necessary minimum when a user who is not connecting many external input sources performs source selection by television / video exchange key, it is effective in a feeling of use improving. Moreover, since a functional setup input/output terminal-related [corresponding to two or more models using for example, the same substrate, a chassis, etc.] cannot be depended on the change in electronic parts but can be performed by software with constituting so that a setup of change effective / invalid of an input/output terminal may be performed by service mode, it has the effectiveness of becoming possible to obtain the variation of a model by the minimum cost.

[Translation done.]